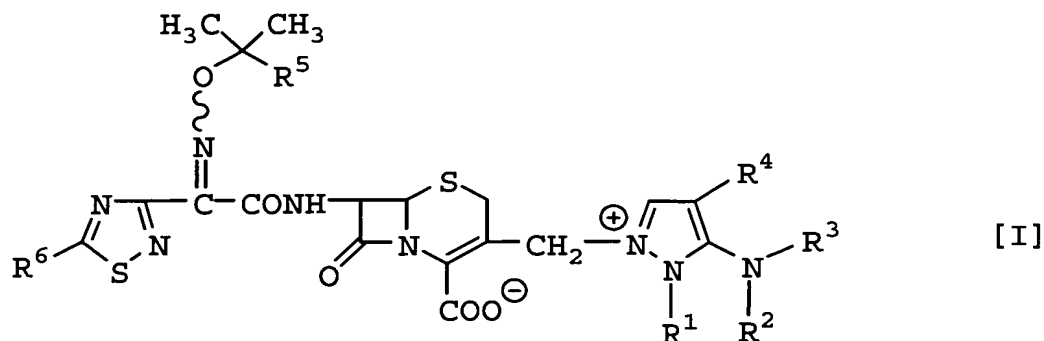


IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A compound of the formula [I]:



wherein

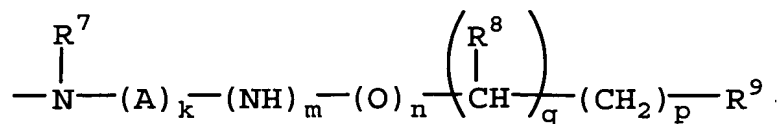
R¹ is lower alkyl, hydroxy(lower)alkyl or halo(lower)alkyl, and

R² is hydrogen, aryl(lower)alkyl or acyl ~~or amine protecting group~~, or

R¹ and R² are bonded together and form lower alkylene or lower alkenylene;

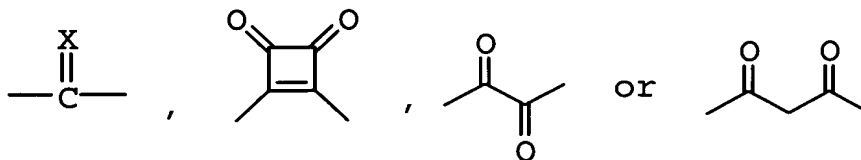
R³ is hydrogen or lower alkyl;

R⁴ is



wherein

A is



wherein X is O or NH,

R⁷ is hydrogen, lower alkyl, aryl(lower)alkyl or acyl ~~or~~

~~amino protecting group,~~

R⁸ is hydrogen or hydroxy,

R⁹ is amino, mono or di(lower)alkylamino,

aryl(lower)alkylamino, acyl aminoprotected amino,
guanidino, protected acyl guanidino or saturated
3- to 8-membered heterocyclic group containing 1
to 4 nitrogen atoms optionally substituted by
amino or protected amino, aryl(lower)alkylamino
or acylamino,

k, m, n and q are independently 0 or 1, and

p is 0, 1, 2 or 3;

R⁵ is carboxy or an esterified carboxy~~protected carboxy~~; and

R⁶ is amino, aryl(lower)alkylamino or acylamino~~or protected~~
~~amino,~~

or a pharmaceutically acceptable salt thereof.

2. (Currently Amended) The compound of claim 1 wherein

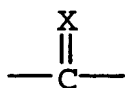
R¹ is lower alkyl or hydroxy(lower)alkyl, and

R² is hydrogen, aryl(lower)alkyl or acyl ~~or amino protecting~~
~~group,~~ or

R¹ and R² are bonded together and form lower alkylene;

R³ is hydrogen;

A is



wherein X is O or NH;

R⁷ is hydrogen, aryl(lower)alkyl or acyl ~~or amino-protecting group~~;

R⁹ is amino, aryl(lower)alkylamino or acylamino ~~or protected amine~~; and

p is 0, 1 or 2,

or a pharmaceutically acceptable salt thereof.

3. (Original) The compound of claim 2 wherein R⁸ is hydrogen, or a pharmaceutically acceptable salt thereof.

4. (Original) The compound of claim 1 wherein

R¹ is lower alkyl, hydroxy(lower)alkyl or halo(lower)alkyl, and

R² is hydrogen, aryl(lower)alkyl or acyl, or

R¹ and R² are bonded together and form lower alkylene or lower alkenylene;

R⁵ is carboxy or esterified carboxy;

R⁶ is amino or acylamino;

R⁷ is hydrogen, lower alkyl or acyl; and

R⁹ is amino, mono or di(lower)alkylamino, acylamino, guanidino, acylguanidino or saturated 3- to 8-membered heterocyclic group containing 1 to 4 nitrogen atoms optionally substituted by amino or acylamino,

or a pharmaceutically acceptable salt thereof.

5. (Original) The compound of claim 4 wherein
R¹ is lower alkyl or hydroxy(lower)alkyl, and
R² is hydrogen, aryl(lower)alkyl or acyl, or
R¹ and R² are bonded together and form lower alkylene;
R⁵ is carboxy or esterified carboxy;
R⁶ is amino or acylamino;
R⁷ is hydrogen or acyl; and
R⁹ is amino or acylamino,
or a pharmaceutically acceptable salt thereof.

6. (Original) The compound of claim 5 wherein
R¹ is lower alkyl or hydroxy(lower)alkyl, and
R² is hydrogen, aryl(lower)alkyl, lower alkanoyl or lower
alkoxycarbonyl, or
R¹ and R² are bonded together and form lower alkylene;
R⁵ is carboxy or lower alkoxycarbonyl;
R⁶ is amino, lower alkanoylamino or lower alkoxycarbonylamino;
R⁷ is hydrogen, lower alkanoyl or lower alkoxycarbonyl; and
R⁹ is amino, lower alkanoylamino or lower alkoxycarbonylamino,
or a pharmaceutically acceptable salt thereof.

7. (Original) The compound of claim 6 wherein
R¹ is lower alkyl or hydroxy(lower)alkyl, and
R² is hydrogen, or
R¹ and R² are bonded together and form lower alkylene;

R⁵ is carboxy;

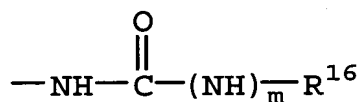
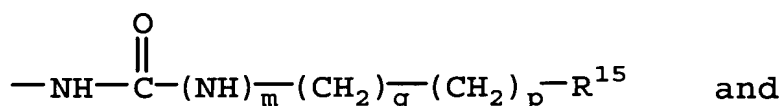
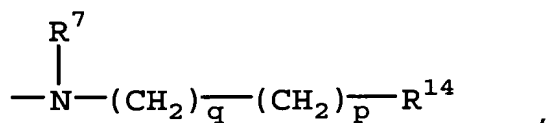
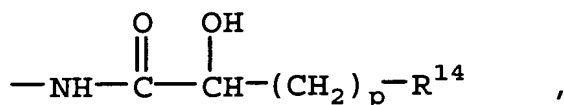
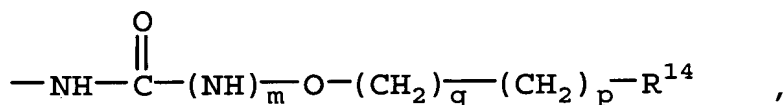
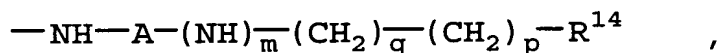
R⁶ is amino;

R⁷ is hydrogen or lower alkanoyl; and

R⁹ is amino,

or a pharmaceutically acceptable salt thereof.

8. (Currently Amended) The compound of claim 1 wherein
R⁴ is selected from the group consisting of



wherein R⁷, A, m, p and q are each as defined in claim 1,

R¹⁴ is amino, mono or di(lower)alkylamino ,

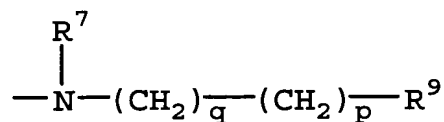
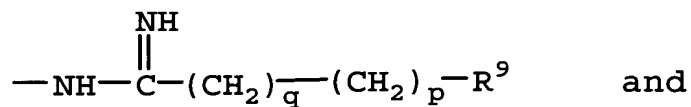
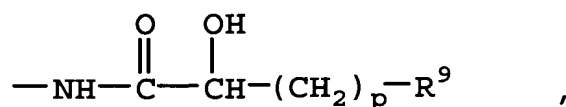
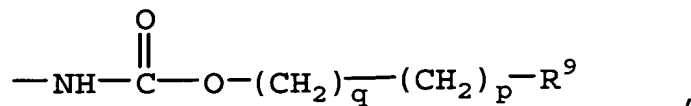
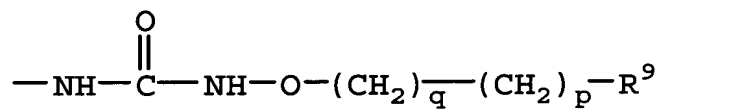
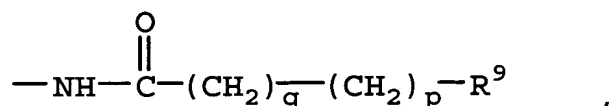
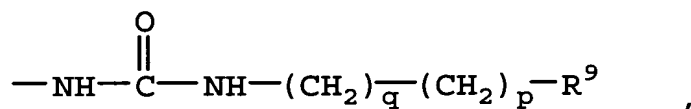
aryl(lower)alkylamino or acylamino ~~or protected amine,~~

R¹⁵ is guanidino or ~~protected~~ aryl guanidino, and

R¹⁶ is saturated 3- to 8-membered heterocyclic group containing

1 to 4 nitrogen atoms optionally substituted by amino,
aryl(lower)alkylamino or acylamino ~~or protected amine~~,
or a pharmaceutically acceptable salt thereof.

9. (Currently Amended) The compound of claim 1 wherein
R⁴ is selected from the group consisting of



wherein

p is 0, 1 or 2,

q is 0 or 1,

R⁷ is hydrogen, aryl(lower)alkyl or acyl ~~or amine protecting~~

~~group~~, and

R⁹ is amino, aryl(lower)alkylamino or acylamino ~~or protected amino~~,

or a pharmaceutically acceptable salt thereof.

10. (Original) The compound of claim 9 wherein

R⁷ is hydrogen, lower alkanoyl or lower alkoxycarbonyl; and

R⁹ is amino, lower alkanoylamino or lower alkoxycarbonylamino, or a pharmaceutically acceptable salt thereof.

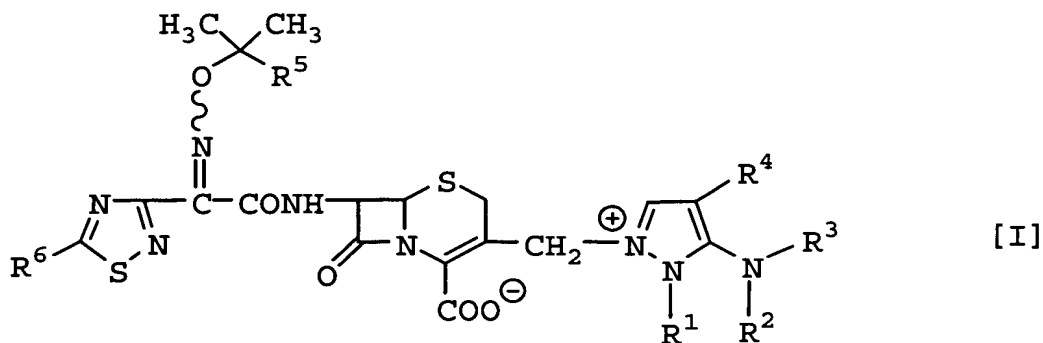
11. (Original) The compound of claim 10 wherein

R⁷ is hydrogen or lower alkanoyl; and

R⁹ is amino,

or a pharmaceutically acceptable salt thereof.

12. (Currently Amended) A process for preparing a compound of the formula [I]:



wherein

R¹ is lower alkyl, hydroxy(lower)alkyl or halo(lower)alkyl, and

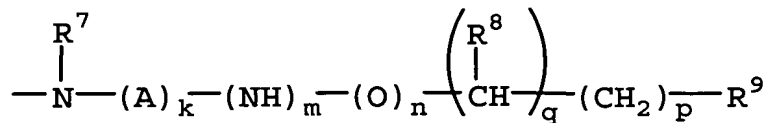
R² is hydrogen, aryl(lower)alkyl or acyl ~~or amino-protecting~~

~~group~~, or

R¹ and R² are bonded together and form lower alkylene or lower alkenylene;

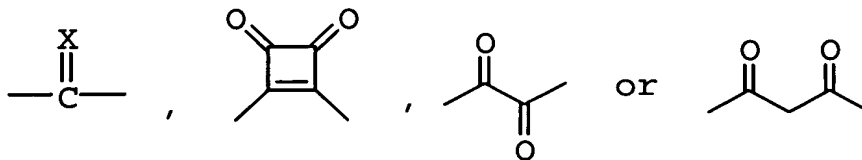
R³ is hydrogen or lower alkyl;

R⁴ is



wherein

A is



wherein X is O or NH,

R⁷ is hydrogen, lower alkyl, aryl(lower)alkyl or acyl or ~~amino-protecting group~~,

R⁸ is hydrogen or hydroxy,

R⁹ is amino, mono or di(lower)alkylamino, ~~protected~~

~~amino~~ aryl(lower)alkylamino, acyl amino,

guanidino, ~~protected~~ acyl guanidino or saturated

3- to 8-membered heterocyclic group containing 1

to 4 nitrogen atoms optionally substituted by

amino, aryl(lower)alkylamino or acylamino or

~~protected amino~~,

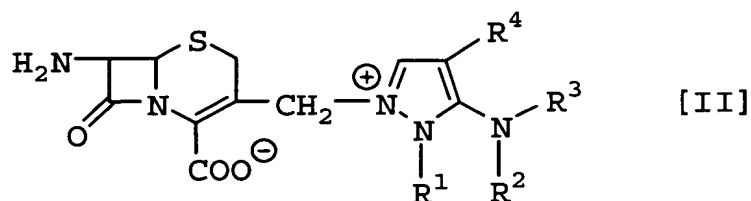
k, m, n and q are independently 0 or 1, and

p is 0, 1, 2 or 3;

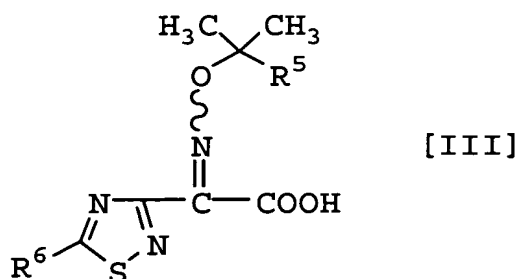
R⁵ is carboxy or an esterified carboxy ~~protected carboxy~~; and
R⁶ is amino , aryl(lower)alkylamino or acylamino ~~or protected amino~~,

or a salt thereof, which comprises

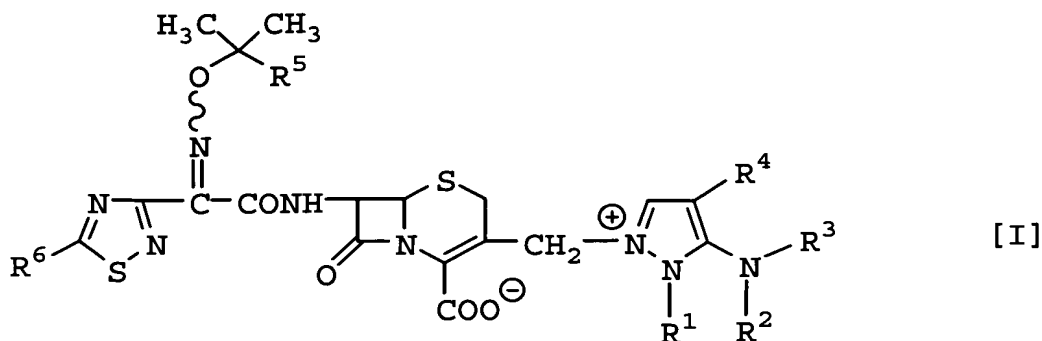
(1) reacting a compound of the formula [II]:



wherein R¹, R², R³ and R⁴ are each as defined above, or its reactive derivative at the amino group, or a salt thereof with a compound of the formula [III]:

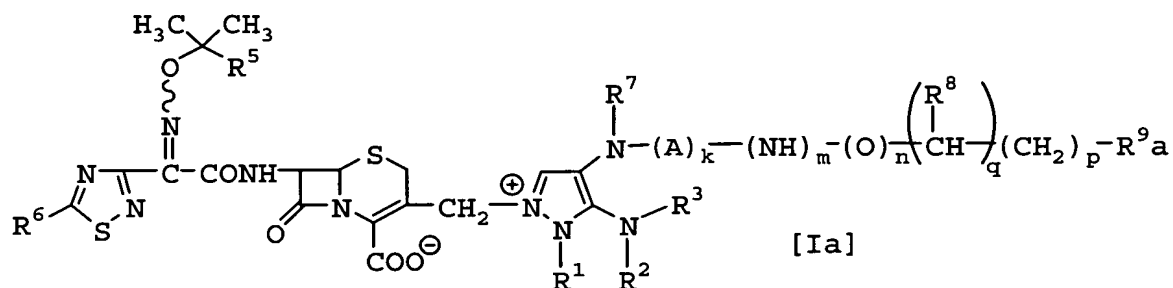


wherein R⁵ and R⁶ are each as defined above, or its reactive derivative at the carboxy group, or a salt thereof to give a compound of the formula [I]:

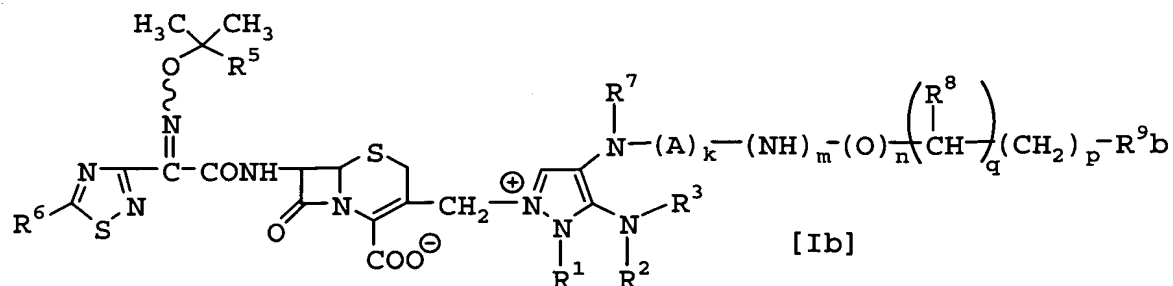


wherein R¹, R², R³, R⁴, R⁵ and R⁶ are each as defined above, or
a salt thereof, or

(2) subjecting a compound of the formula [Ia]:



wherein R¹, R², R³, R⁵, R⁶, R⁷, R⁸, A, k, m, n, p and q are each as defined above, and R⁹a is aryl(lower)alkylamino or acylamino~~or protected amine~~, ~~protected~~ acylguanidino or saturated 3- to 8-membered heterocyclic group containing 1 to 4 nitrogen atoms substituted by aryl(lower)alkylamino or acylamino~~or protected amine~~, or a salt thereof to elimination reaction of ~~the amino~~ a protecting group on the amino to give a compound of the formula [Ib]:



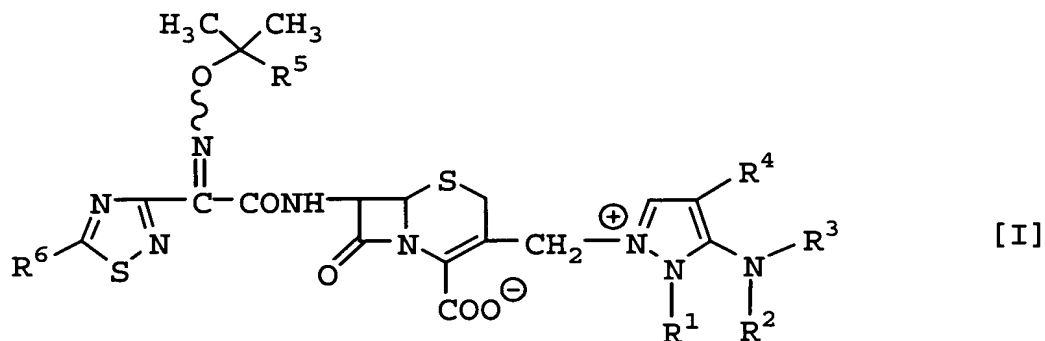
$$\begin{array}{c}
 \text{H}_3\text{C} \quad \text{CH}_3 \\
 \diagdown \quad \diagup \\
 \text{C} \\
 \diagup \quad \diagdown \\
 \text{O} \\
 | \\
 \text{N} \\
 | \\
 \text{C} = \text{N} \\
 | \\
 \text{C} - \text{CONH} - \text{C}(\text{S}) = \text{N} - \text{C}(\text{R}^6) = \text{N} - \text{S} - \text{N} \\
 | \quad | \quad | \quad | \quad | \\
 \text{O} \quad \text{R}^{10} \quad \text{CH}_2 - \text{Y}
 \end{array}
 \quad [\text{VI}]$$
$$\begin{array}{c} \text{R}^4 \\ \diagup \\ \text{N} \diagdown \\ | \\ \text{N} \text{---} \text{R}^1 \\ | \\ \text{R}^2 \end{array} \quad \begin{array}{c} \text{R}^3 \\ \diagup \\ \text{N} \diagdown \\ | \\ \text{R}^2 \end{array} \quad \text{[VII]}$$
$$\begin{array}{c}
\text{H}_3\text{C} \quad \text{CH}_3 \\
| \quad | \\
\text{O} - \text{C} - \text{R}^5 \\
|| \\
\text{N} \\
|| \\
\text{C} = \text{CONH} -
\end{array}$$

The rest of the structure is as previously defined.

[VIII]

12

and Z^{\ominus} is an anion, or a salt thereof, and
subjecting the compound of the formula [VIII] or a salt thereof to elimination reaction of the group protecting the esterified carboxy protecting group, to give a compound of the formula [I]:



wherein R¹, R², R³, R⁴, R⁵ and R⁶ are each as defined above, or a salt thereof.

13. (Original) A pharmaceutical composition comprising a compound of claim 1 or a pharmaceutically acceptable salt thereof in admixture with a pharmaceutically acceptable carrier.

Claims 14-16 (Cancelled)

17. (Currently Amended) A method for ~~the treatment of infectious diseases which~~ treating a bacterial infection comprising administering a compound of claim 1 or a pharmaceutically acceptable salt thereof to human or animals.

18. (New) The compound of claim 1, which is 7β -[(Z)-2-(5-amino-1,2,4-thiadiazol-3-yl)-2-(1-carboxy-1-methylethoxyimino)acetamido]-3-[7-(3-aminopropionamido)-2,3-dihydro-5-(1H-imidazo[1,2-b]pyrazolio)]methyl-3-cephem-4-carboxylate.

19. (New) The compound of claim 1, which is 7β -[(Z)-2-(5-amino-1,2,4-thiadiazol-3-yl)-2-(1-carboxy-1-methylethoxyimino)acetamido]-3-[3-amino-4-(3-aminopropionamido)-2-methyl-1-pyrazolio]methyl-3-cephem-4-carboxylate.

20. (New) The compound of claim 1, which is 7β -[(Z)-2-(5-amino-1,2,4-thiadiazol-3-yl)-2-(1-carboxy-1-methylethoxyimino)acetamido]-3-[3-amino-4-(aminoacetyl)amino-2-methyl-1-pyrazolio]methyl-3-cephem-4-carboxylic acid hydrogen sulfate.

21. (New) The compound of claim 1, which is 7β -[(Z)-2-(5-amino-1,2,4-thiadiazol-3-yl)-2-(1-carboxy-1-methylethoxyimino)acetamido]-3-{3-amino-4-[3-(2-aminoethyl)ureido]-2-methyl-1-pyrazolio}methyl-3-cephem-4-carboxylic acid hydrogen sulfate.

22. (New) The compound of claim 1, which is 7β -[(Z)-2-(5-

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amino-1,2,4-thiadiazol-3-yl)-2-(1-carboxy-1-methylethoxyimino)acetamido]-3-(3-amino-4-guanidino-2-methyl-1-pyrazolio)methyl-3-cephem-4-carboxylic acid hydrogen sulfate.